

What is claimed is:

1. A wafer polishing apparatus comprising:
 - an abrasive pad;
 - a platen for holding and rotating said abrasive pad;
 - 5 a head for holding a wafer and rotating the wafer while pressing the wafer against the abrasive pad; and
 - conditioning mechanism for honing the abrasive pad including
 - a conditioner for honing the wafer in contact therewith,
 - a conditioner driving unit for holding and rotating the
 - 10 conditioner,
 - an arm for holding the conditioner driving unit, and
 - a plurality of detectors each detecting a force in the rotational direction of the platen and a force in the radial direction orthogonal to the rotational direction of the platen among forces applied to the conditioner
 - 15 driving unit.
2. The apparatus according to claim 1, wherein said detectors each includes a rotational directional pressure detector located between one side along the rotational direction of the platen, of the conditioner driving unit
- 20 and the holding portion of the arm, and two radial directional pressure detectors located between the both sides along the radial direction of the platen, of the conditioner driving unit and the holding portion of the arm, and
- a fixing jig for holding the conditioner driving unit is provided between the other side along the rotational direction of the platen, of the
- 25 conditioner driving unit and the holding portion of the arm.

3. The apparatus according to claim 2, wherein
the holding portion of said arm is a hole into which the
conditioner driving unit is inserted, and
said conditioner driving unit is held in the hole through the
5 rotational directional pressure detector, the two radial directional pressure
detectors, and the fixing jig.

4. The apparatus according to claim 1, wherein the detectors
respectively include at least one of a piezoelectric element, load cell,
10 differential transformer, stain gauge, or semiconductor strain gauge.

5. The apparatus according to claim 1, further comprising a
memory for storing correlations between output values of said detectors and
polishing quantities of said wafer.
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6. The apparatus according to claim 2, further comprising a
memory for storing correlations between output values of said detectors and
polishing quantities of said wafer.

20 7. The apparatus according to claim 3, further comprising a
memory for storing correlations between output values of said detectors and
polishing quantities of said wafer.

8. The apparatus according to claim 4, further comprising a
25 memory for storing correlations between output values of said detectors and
polishing quantities of said wafer.

9. The apparatus according to claim 1, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits,
5 changing conditioning terms.

10. The apparatus according to claim 2, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits,
10 changing conditioning terms.

11. The apparatus according to claim 3, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits,
15 changing conditioning terms.

12. The apparatus according to claim 4, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits,
20 changing conditioning terms.

13. The apparatus according to claim 5, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits,
25 changing conditioning terms.

14. The apparatus according to claim 6, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits, changing conditioning terms.

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15. The apparatus according to claim 7, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits, changing conditioning terms.

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16. The apparatus according to claim 8, further comprising a controller which determines whether detection values of said detectors are within acceptable limits and when any one of the values is out of the limits, changing conditioning terms.

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17. A wafer polishing method comprising steps of;
rotating a wafer while pressing said wafer against an abrasive pad, and detecting a force in the rotational direction of said abrasive pad and a force in the radial direction orthogonal to the rotational direction of the abrasive pad among the forces applied to the conditioner driving unit when honing the abrasive pad by a conditioner at a predetermined timing; and
changing conditioning terms so that detection values of the detectors fall within a range when any one of the detection values by the detectors gets out of the range of a force corresponding to a predetermined range of the polishing quantity of the wafer.

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